

210 Park Avenue
Suite 1130
Oklahoma City, OK 73102



Os 6322

405.606.7481 (office)
405.606.7483 (fax)

November 17, 2011

Ms. Christina Mashunkashey
Osage Nation UIC
100 W. Main St. Ste 304
Pawhuska, Oklahoma 74056



Re: Well Permit Application

Dear Christina,

Enclosed are the forms of the Application for Operation of Report on Wells for a new well (Tremors #3) to be drilled in the NW/4 of Section 24-25N-2E, Osage County, Oklahoma. Enclosed with the blue form is the required information relating to our casing, cement and mud program, proposed total depth, well plat, wellbore schematic, and notification statements. I have also enclosed the Archeological Survey Report prepared by Briscoe-Szarka Consulting Services, together with a well survey. We have also sent the application to the BIA for their approval to drill the well.

We have been in contact with the surface owner and the surface tenant, and have conducted a site visit to stake the well and discuss the access road. We have sent the surface owner the commencement payment.

Please let us know if you need anything else from us.

Sincerely,


Frank Schroeder

Telephone: (405) 606-7481

CRECO Operating, LLC
Tremors #3
Osage County, OK

Proposed TD: 5200'

Casing program:

9 5/8" 36# J-55 Surface casing to 350'
7" 23# J-55 casing to 4400'
Open hole (6 1/8") from 4400' to 5200'

Cement program:

Surface casing cemented to surface
Production casing cemented to cover any productive or possibly corrosive
formations

Mud program:

All mud will be a fresh water system

Productive formations:

Mississippi Lime
Mississippi Chat
Layton

Attn:

Jay

Timerson

CRECO op

25N - 2E

Tremors 1

Tremors 3-24 SWD

24

USDA 2451
Well 1
Caja ABR well
#050006000

Map 2301

0 7 9
FEET

TABULATIONS OF WELLS WITHIN 1/4 MILE RADIUS OF PROPOSED INJECTION WELL

Well Name Trenors 1 Company Name CRECO Operating, LLC Date Drilled 4/7/10 Depth 4111
 Location 1602 F N L & 1002 F E L, NW 1/4, Sec. 24, T 25 N, R 2 E Status Pic
 Elevation 914 (GL/KB)

Hole Size (inches)	Casing Size (inches)	Landed Depth (feet)	Cement & Additives Data	Top of Cement (feet)	If well is TA or PA Describe How:
12 1/4	8 5/8	330'	2605x Class A	surface	
7 7/8	5 1/2	4111'	2705x Class H	2450'	

Formations open to wellbore: Layton

*
 Well Name _____ Company Name _____ Date Drilled _____ Depth _____
 Location _____ F _____ L & _____ F _____ L, _____ /4, Sec. _____, T _____ N, R _____ E Status _____
 Elevation _____ (GL/KB)

Hole Size (inches)	Casing Size (inches)	Landed Depth (feet)	Cement & Additives Data	Top of Cement (feet)	If well is TA or PA Describe How:

Formations open to wellbore: _____

*
 Well Name _____ Company Name _____ Date Drilled _____ Depth _____
 Location _____ F _____ L & _____ F _____ L, _____ /4, Sec. _____, T _____ N, R _____ E Status _____
 Elevation _____ (GL/KB)

Hole Size (inches)	Casing Size (inches)	Landed Depth (feet)	Cement & Additives Data	Top of Cement (feet)	If well is TA or PA Describe How:

Formations open to wellbore: _____

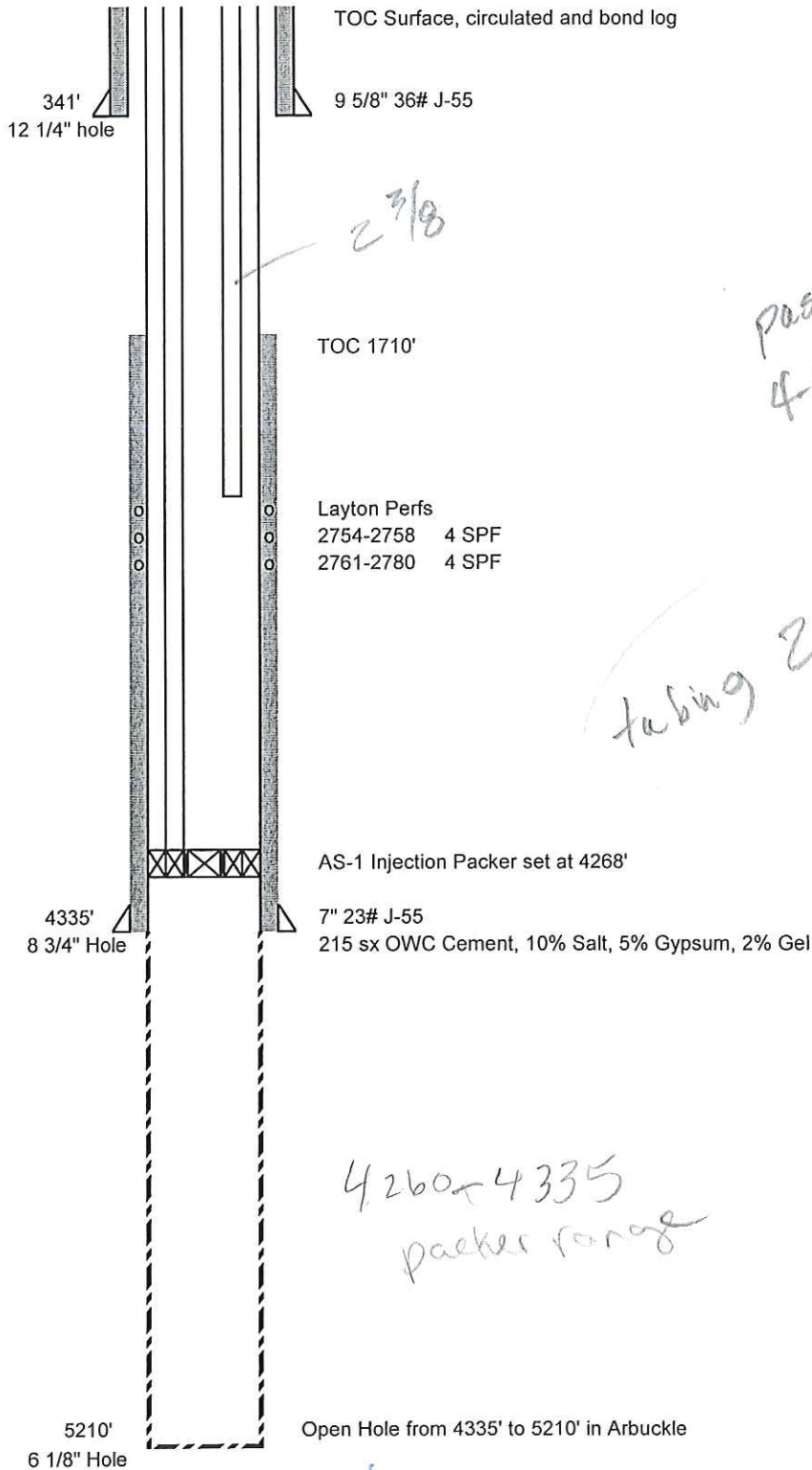
056322

WELLBORE DIAGRAM

Company: CRECO Operating, LLC
 Lease: Tremors
 Location: 2274' FNL & 1124' FWL
 Survey:
 Ct/St: Osage, OK
 Current Stat.: Completing

Well No.: #3 SWD
 Sec: NW/4 24-25N-02E
 G.L.: 909
 K.B.: 919 D.F.: 918

DATE: 11/15/11
 Field: Ponca City South
 Spud: 2/10/12
 Comp: 2/28/12
 Initial Form: Arbuckle Disp



*Must use A7A test
 for MIT*

*passed Nitrogen 1500#
 4-2-12 @ 30 min*

tubing 2 3/8"

*4260-4335
 packer range*

*IP =
 175 - (4335 - 4335)
 = 1186*

850 psi

*Dual completion code 5
 0651265P6322*

WELL OPERATION & GEOLOGICAL DATA

Permit Number OS 6322
(for Osage UIC use only)

Type of Injection Well: SWD
(EOR / SWD / HC Storage)

☒ New Conversion / Authorized By Rule)

Injection:

Rate (B/D): Average 10,000 Maximum 25,000
Fluid: Tds 248444 mg/L sp. Gr. 1.165 Analyses Included: (Yes ☒ No)
Source (Formation name): Lanton + Mississippi
Will anything be added to the water to be injected? (Yes ☒ No)
What will those additives be? Scale Inhibitor

Geologic Data:

All references to depths are below land surface.

Injection Intervals: 4335' to 5210'; _____ to _____
Formation Name Arbuckle Lithology Dolomite Porosity (%) 8% est.
Permeability (md) _____ Total formation thickness 800' est.
Perforated or open hole interval 4335 to 5210'

Formation Name _____ Lithology _____ Porosity (%) _____
Permeability (md) _____ Total formation thickness _____
Perforated or open hole interval _____

Current Fluid Level in Well 390' ft. (below land surface) and / or
Current Reservoir Pressure _____ Date _____
Drill Stem Test (Yes ☒ No) If yes, attach copy.
Depth of nearest fresh water well(s) _____ ft.

Facilities Associated with Injection Well:

Adequate Berm around tank battery? (Yes ☒ No)
Leaking Flow Lines? (Yes ☒ No)

Formation:

Top/Bottom From PBTD to Surface.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

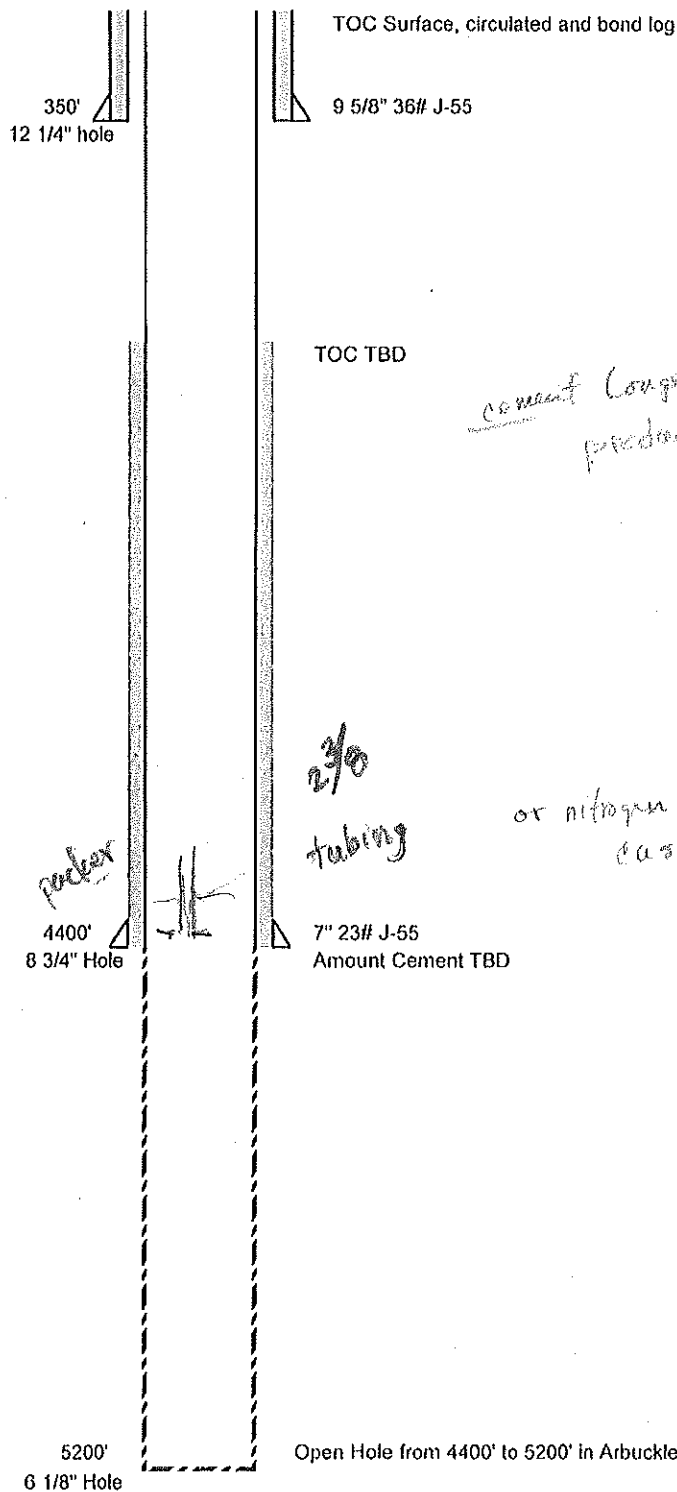
[Jim @ cardinalriver.com]

Proposed
WELLBORE DIAGRAM

Company: CRECO Operating, LLC
Lease: Tremors
Location: 2274' FNL & 1124' FWL
Survey:
Ct/St: Osage, OK
Current Stat.: Proposed

Well No.: #3 SWD
Sec: NW/4 24-25N-02E
G.L.:
K.B.: 909 D.F.:

DATE: 11/15/11
Field: Ponca City South
Spud:
Comp:
Initial Form:



WELL OPERATION & GEOLOGICAL DATA

Permit Number _____
(for Osage UIC use only)

Type of Injection Well: SWD
(EOR / SWD / HC Storage)

(New / Conversion / Authorized By Rule)

1000'
7-8,000

Injection:

Rate (B/D): Average 10,000 Maximum 25,000
Fluid: Tds _____ sp. Gr. _____ Analyses Included: (Yes / No)
Source (Formation name): Layton + Mississippi
Will anything be added to the water to be injected? (Yes / No)
What will those additives be? Scale Inhibitor

Geologic Data:

All references to depths are below land surface.

Injection Intervals: 4400 to 5200 ; _____ to _____
Formation Name Arbuckle Lithology Dolomite Porosity (%) 8% est.
Permeability (md) _____ Total formation thickness 800' est.
Perforated or open hole interval 4400 - 5200

Formation Name _____ Lithology _____ Porosity (%) _____
Permeability (md) _____ Total formation thickness _____
Perforated or open hole interval _____

Current Fluid Level in Well _____ ft. (below land surface) and / or
Current Reservoir Pressure _____ Date _____
Drill Stem Test (Yes / No) If yes, attach copy.
Depth of nearest fresh water well(s) _____ ft.

Facilities Associated with Injection Well:

Adequate Berm around tank battery? (Yes / No)
Leaking Flow Lines? (Yes / No)

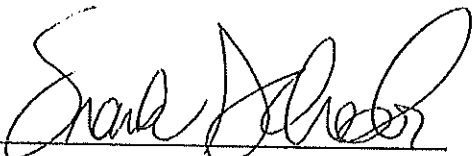
Formation:


Top/Bottom From PBTD to Surface.

_____	/	_____
_____	/	_____
_____	/	_____
_____	/	_____
_____	/	_____

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibilities of fine and imprisonment.


Name


Title

****If certification is signed by a party other than the injection well owner/operator a written statement of authorization signed by the owner/operator must accompany the application.***

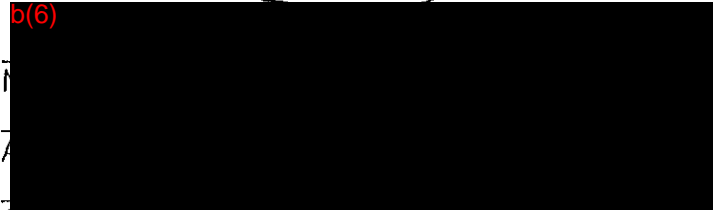
APPLICANT'S PUBLIC NOTICE OF PERMIT AND VERIFICATION
(§147.2918 (b) (s) and §147.2929 (d) (ii))

CRECO Operating, LLC is applying for a permit for a Class II
(Operator Name)
injection well. Well No. 3 is located 2274 ft. from N S line and
1124 ft. from [E W line. 11W 24 25N 2E
(1/4 Sec. & Sec. No.) (Twp.) (Rge.)
The well will be used to inject salt water into the Arbuckle
(Fluid Type) (Formation Name)
for (disposal/enhanced recovery). The well operator's address is 210 Park Ave,
Suite 1130 Oklahoma City, Ok 73102
(Street/P.O. Box/City/State/Zip Code)

EPA may prepare a draft permit or a notice of intent to deny this application. Following the preparation of a draft permit or intent to deny, there will be an opportunity for public comments. For further information concerning the status of this application, please contact:

Osage UIC Office
P. O. Box 1495
Pawhuska, Oklahoma 74056
Phone: (918) 287-5333

Notice Sent To: (Surface Owner) Tenant/Operator) Circle one



City / State / Zip Code

I certify that the surface owner(s), the tenants on land where the injection well is located, and each operator of a producing lease within one-half mile of the well location was mailed a copy of this notice as required by 40 CFR §147.2918.

[Signature]
(Owner/Operator Signature)

11/17/11
(Date of Notice)

APPLICANT'S PUBLIC NOTICE OF PERMIT AND VERIFICATION
(\$147.2918 (b) (s) and §147.2929 (d) (ii))

CRECO Operating, LLC is applying for a permit for a Class II
(Operator Name)
injection well. Well No. 3 is located 2274 ft. from N S line and
1124 ft. from [E W line. NW 24 25N 1E
(1/4 Sec. & Sec. No.) (Twp.) (Rge.)
The well will be used to inject Salt Water into the Arbuckle
(Fluid Type) (Formation Name)
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P. O. Box 1495
Pawhuska, Oklahoma 74056
Phone: (918) 287-5333

Notice Sent To: (Surface Owner) (Tenant) (Operator) Circle one

b(6)

City / State / Zip Code

I certify that the surface owner(s), the tenants on land where the injection well is located, and each operator of a producing lease within one-half mile of the well location was mailed a copy of this notice as required by 40 CFR §147.2918.

[Signature]
(Owner/Operator Signature)

11/17/11
(Date of Notice)

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Osage UIC Office
P. O. Box 1495
Pawhuska, Oklahoma 74056
Phone: (918) 287-5333

Notice Sent To: (Surface Owner/Tenant) (Operator) Circle one

Cega Corporation
Name
1437 South Boulder # 1250
Address
Tulsa, Ok 74119
City / State / Zip Code

I certify that the surface owner(s), the tenants on land where the injection well is located, and each operator of a producing lease within one-half mile of the well location was mailed a copy of this notice as required by 40 CFR §147.2918.

[Signature]
(Owner/Operator Signature)

11/17/11
(Date of Notice)

APPLICANT'S PUBLIC NOTICE OF PERMIT AND VERIFICATION
(§147.2918 (b) (s) and §147.2929 (d) (ii))

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Osage UIC Office
P. O. Box 1495
Pawhuska, Oklahoma 74056
Phone: (918) 287-5333

Notice Sent To: (Surface Owner/Tenant/Operator) Circle one

Sellers Family Partnership
Name
PO Box 730
Address
Sapulpa, Ok 74067
City / State / Zip Code

I certify that the surface owner(s), the tenants on land where the injection well is located, and each operator of a producing lease within one-half mile of the well location was mailed a copy of this notice as required by 40 CFR §147.2918.

[Signature]
(Owner/Operator Signature)

11/17/11
(Date of Notice)

APPLICANT'S PUBLIC NOTICE OF PERMIT AND VERIFICATION
 (§147.2918 (b) (s) and §147.2929 (d) (ii))

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(Operator Name)
injection well. Well No. 3 is located 2274 ft. from N S) line and
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Osage UIC Office
P. O. Box 1495
Pawhuska, Oklahoma 74056
Phone: (918) 287-5333

Notice Sent To: (Surface Owner/Tenant/Operator) Circle one

Coronado Petroleum Corp
Name
105 N. Hudson Ave Ste 800
Address
Oklahoma City, Ok 73102-4803
City / State / Zip Code

I certify that the surface owner(s), the tenants on land where the injection well is located, and each operator of a producing lease within one-half mile of the well location was mailed a copy of this notice as required by 40 CFR §147.2918.

[Signature]
(Owner/Operator Signature)

11/17/11
(Date of Notice)

210 Park Avenue
Suite 1130
Oklahoma City, OK 73102



405.606.7481 (office)
405.606.7483 (fax)

February 29, 2012

Mr. Arnold Bierschenk
EPA
1445 Ross Ave
6WQSG
Dallas, TX 75202-2733

Re: UIC Permit Application – EMERGENCY A
CRECO Operating, LLC
Tremors #3
Permit # OS-6322
NW/4 24-25N-02E

MIT in
about 2 weeks
3-14-12
passed MIT ✓

Dear Mr. Bierschenk,

As we discussed on the phone today, enclosed are the cement bond log and as-built wellbore diagram for the Tremors #3 well. We would appreciate a quick turn-around of the permit so that we can start disposing ASAP.

Please let us know if you need anything else from us.

Sincerely,


Frank Schroeder

RECEIVED
SOURCE WATER
PROTECTION BRANCH
12 MAR -5 AM 7:34
6WQ-S

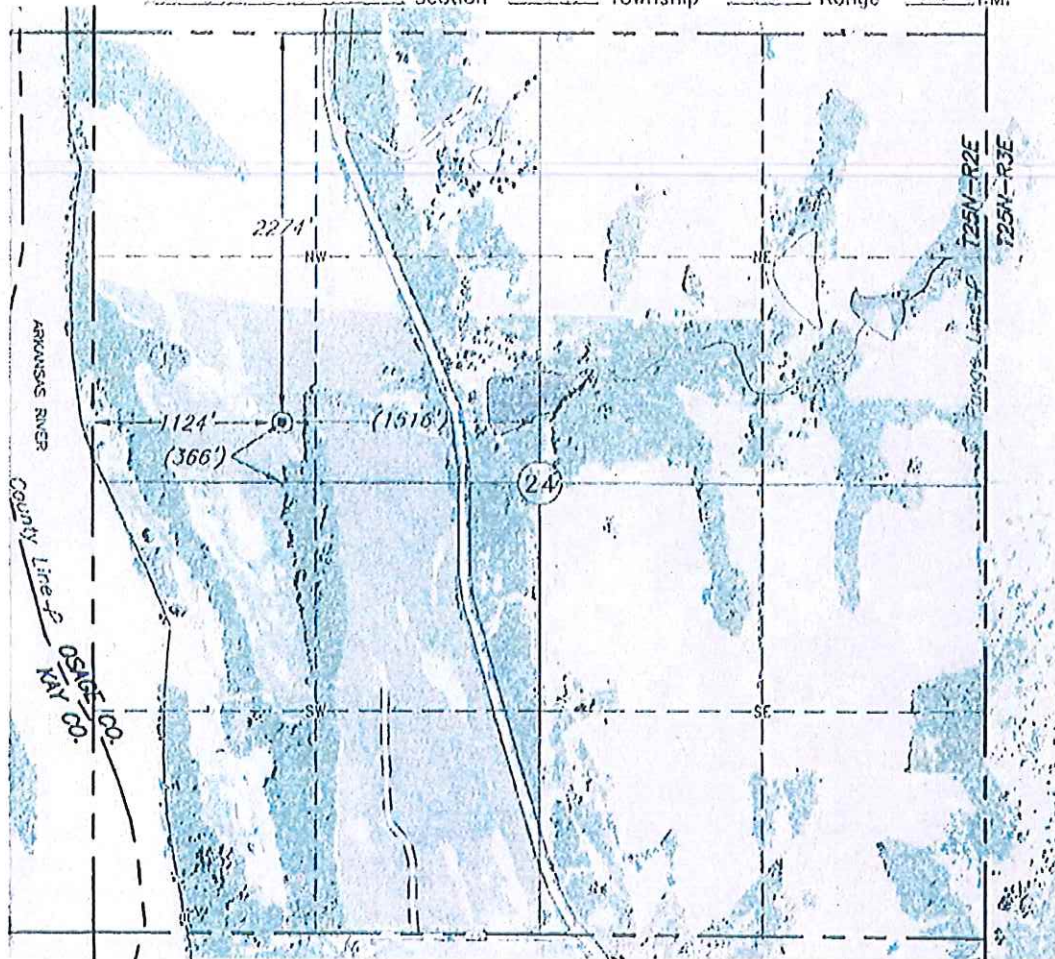
TOPOGRAPHIC LAND SURVEYORS OF OKLAHOMA

6709 NORTH CLASSEN BLVD., OKLA. CITY, OKLA. 73116 • LOCAL (405) 843-1847 • OUT OF STATE (800) 654-3219
Certificate of Authorization No. 1293

OSAGE

County, Oklahoma

2274' FNL - 1124' FWL Section 24 Township 25N Range 2E I.M.



This location has been very carefully staked on the ground according to the best official survey records, maps, and photographs available to us, but its accuracy is not guaranteed. Review this plot and notify us immediately of any possible discrepancy.

Distances shown in (parenthesis) are calculated based upon the Quarter Section being 2640 feet, those shown in [brackets] are based on GLO (General Land Office) distances and have not been measured.

Operator: CRECO, LLC

Lease Name: TREMORS

Well No.: 3-24

ELEVATION:

909' Gr. at Stake

Topography & Vegetation Loc. fell in wheat field

Good Drill Site? Yes

Reference Stakes or Alternate Location
Stakes Set None

Best Accessibility to Location From North

Distance & Direction

from Hwy Jct or Town From Jct. US Hwy. 177 and US Hwy. 60 at Ponca City, OK, go 1.5 mi. East on US Hwy. 60, then 3.1 mi. S-SE on Old River Road to the North Line of Sec. 24--T25N--R2E

The following information was gathered using a GPS receiver
Accuracy ±2-3 Meters.

GPS

DATUM: NAD-27

LAT: 36°37'51.3"N

LONG: 97°02'43.1"W

STATE PLANE
COORDINATES:

ZONE: OK NORTH

X: 2280144

Y: 595058

Invoice # 155179 Date of Drawing: Apr. 30, 2010
Date Staked: Apr. 27, 2010

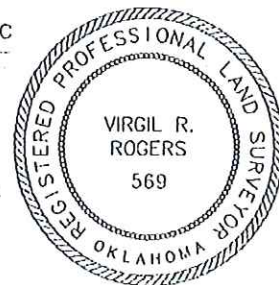
AC

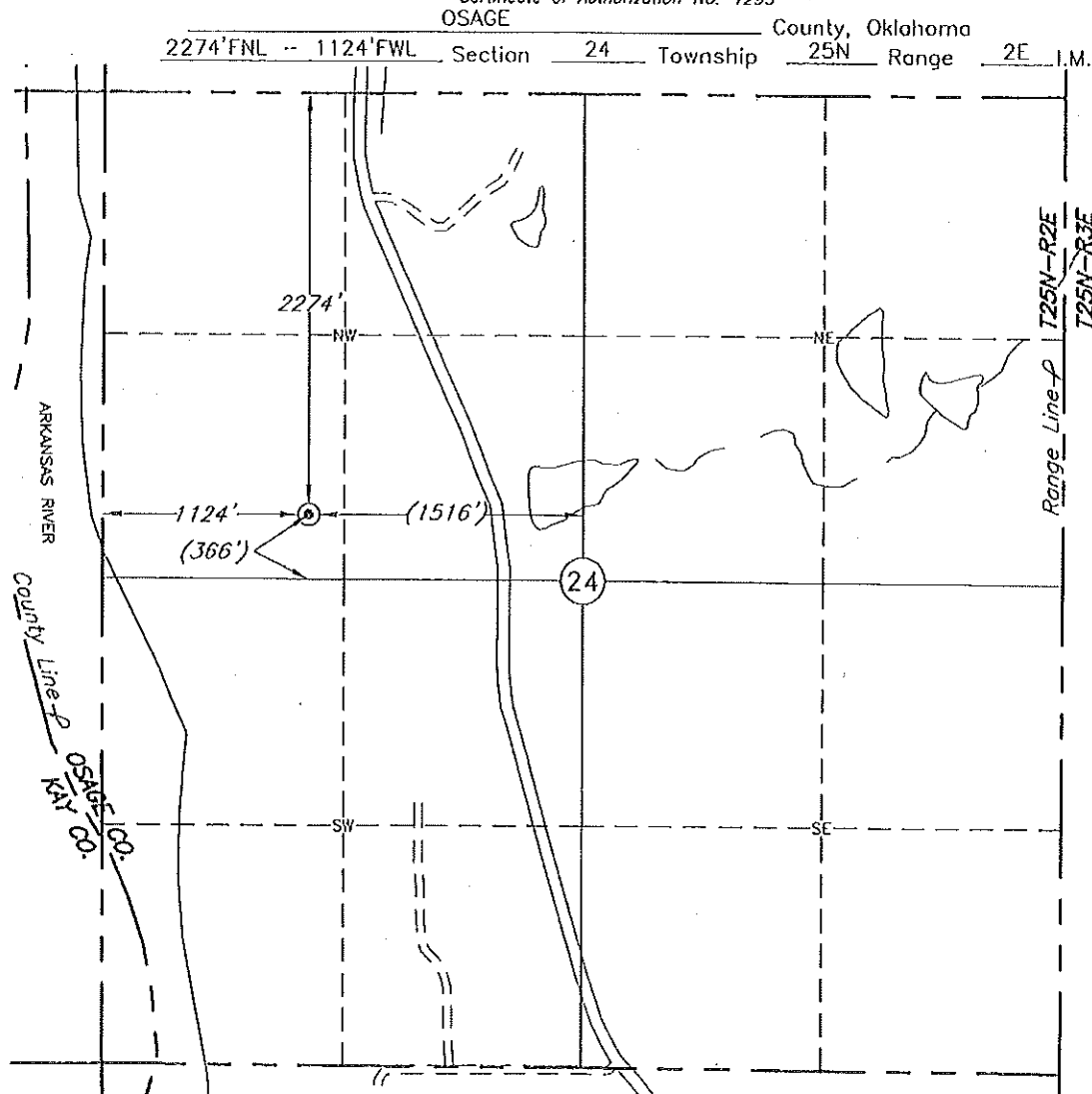
CERTIFICATE:

I, VIRGIL R. ROGERS a Registered Land Surveyor and an authorized agent of Topographic Land Surveyors, do hereby certify that the above described well location was surveyed and staked on the ground as shown herein.

Virgil R. Rogers

Oklahoma Reg. No. 569





This location has been very carefully staked on the ground according to the best official survey records, maps, and photographs available to us, but its accuracy is not guaranteed. Review this plot and notify us immediately of any possible discrepancy.

Distances shown in (parenthesis) are calculated based upon the Quarter Section being 2640 feet, those shown in [brackets] are based on GLO (General Land Office) distances and have not been measured.

Operator: CRECO, LLC
Lease Name: TREMORS

Well No.: 3-24

ELEVATION:

909' Gr. at Stake

Topography & Vegetation Loc. fell in wheat field

Good Drill Site? Yes Reference Stakes or Alternate Location
Stakes Set None

Best Accessibility to Location From North

Distance & Direction

from Hwy Jct or Town From Jct. US Hwy. 177 and US Hwy. 60 at Ponca City, OK, go 1.5 mi. East on US Hwy. 60, then 3.1 mi. S-SE on Old River Road to the North Line of Sec. 24-T25N-R2E

The following information was gathered using a GPS receiver
Accuracy 12-3 Meters.

GPS
DATUM: NAD-27
LAT: 36°37'51.3"N
LONG: 97°02'43.1"W

STATE PLANE
COORDINATES:
ZONE: OK NORTH
X: 2280144
Y: 595058

Date of Drawing: Apr. 30, 2010

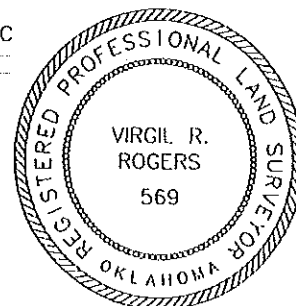
Invoice # 155179 Date Staked: Apr. 27, 2010

AC

CERTIFICATE:

I, VIRGIL R. ROGERS a Registered Land Surveyor and an authorized agent of Topographic Land Surveyors, do hereby certify that the above described well location was surveyed and staked on the ground as shown herein.

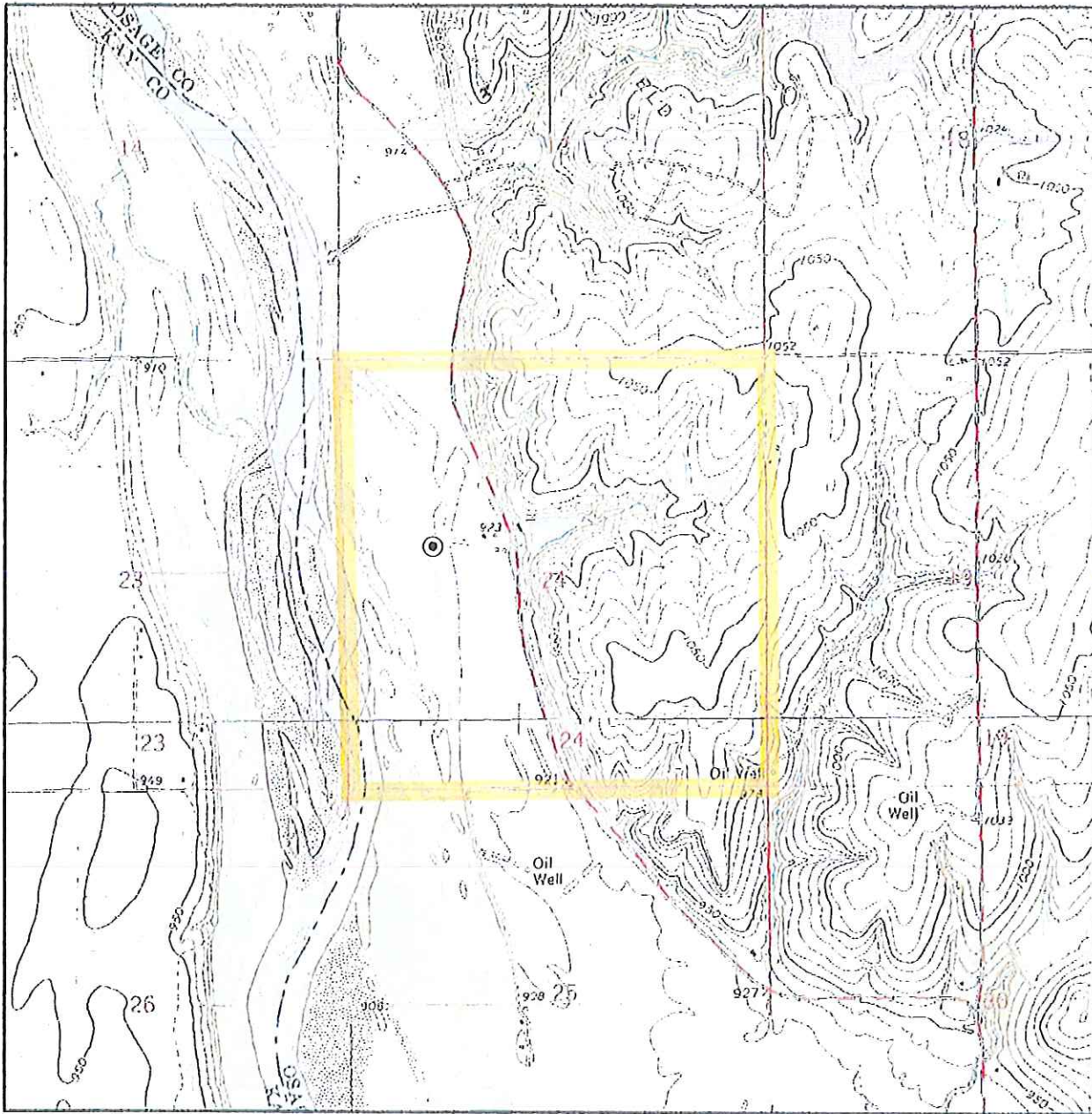
Virgil R. Rogers
Oklahoma Reg. No. 569



TOPOGRAPHIC AND SURVEYORS OF OKLAHOMA

Surveying and Mapping for the Energy Industry
6709 North Classen Blvd. Oklahoma City, OK 73116 www.topographic.com
Telephone Numbers: Local (405) 843-4847 Toll Free (800) 654-3219

LOCATION & ELEVATION VERIFICATION MAP



Sec. 24 Twp. 25N Rng. 2E

County OSAGE State OK

Operator CRECO, LLC

Description 2274'FNL - 1124'FWL

Lease TREMORS 3-24

Elevation 909' Gr. at Stake

U.S.G.S. Topographic
Quadrangle Map PONCA CITY SE, OK

Above Background Data from
U.S.G.S. Topographic Map

Scale: 1"=2000'

Contour Interval 10'

This location has been very carefully staked on the ground according to the best official survey records, maps and photographs available to us, but its accuracy is not guaranteed. When elevation is shown hereon it is the ground elevation of the location stake.
Review this plat and inform us immediately of any possible discrepancy

TOPOGRAPHIC

SURVEYING • MAPPING • GIS • GPS

**LAND SURVEYORS
OF OKLAHOMA**

Apr. 27, 2010

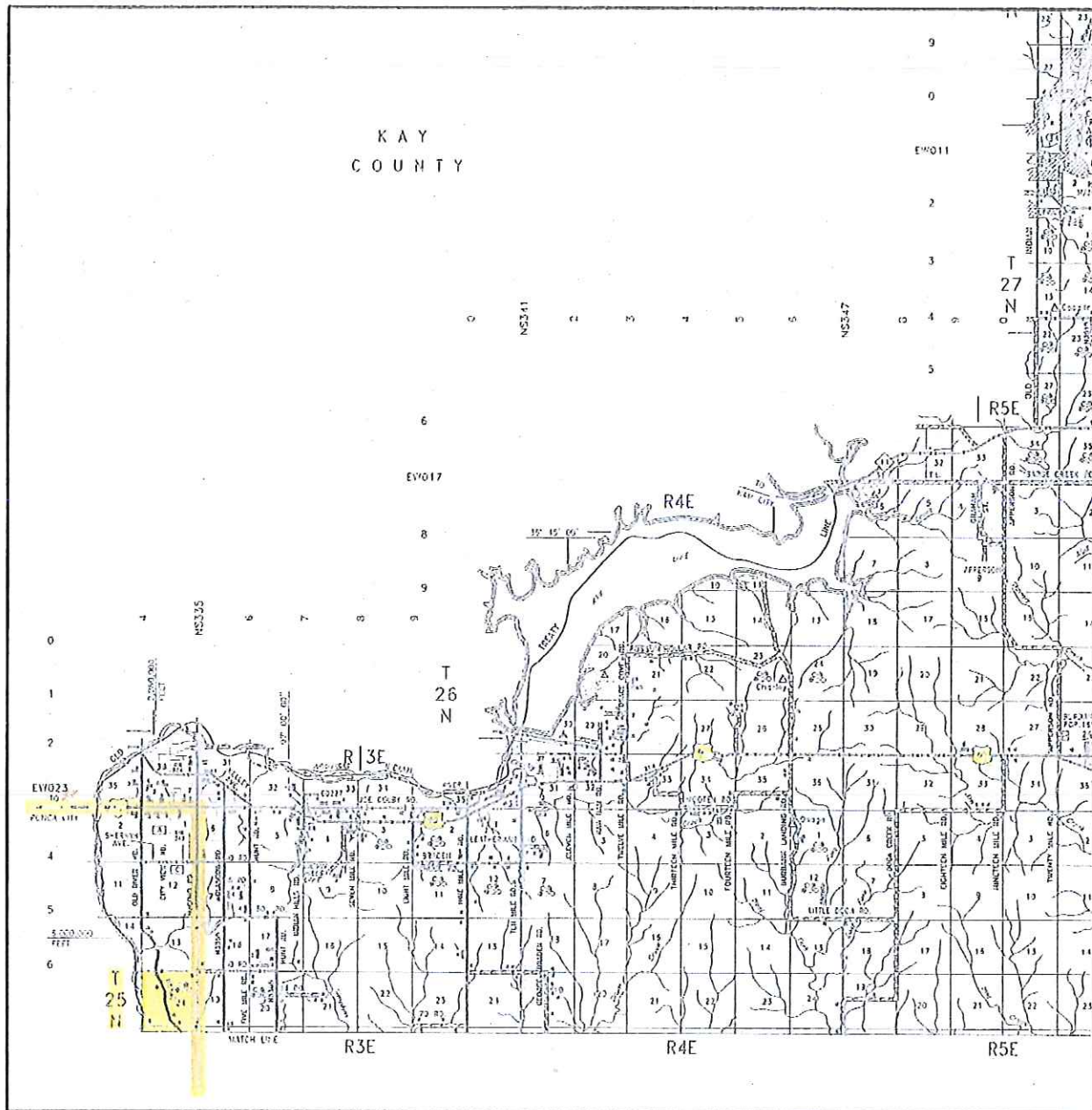
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Surveying and Mapping for the Energy Industry

6709 North Classen Blvd. Oklahoma City, OK 73116 www.topographic.com

Telephone Numbers: Local (405) 843-4847 Toll Free (800) 654-3219

VICINITY MAP



Scale: 1" = 3 Miles

Sec. 24 Twp. 25N Rng. 2E

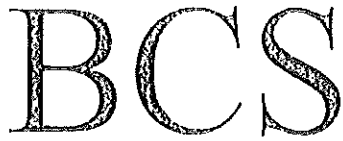
County OSAGE State OK

Operator CRECO, LLC

TOPOGRAPHIC

SURVEYING • MAPPING • GIS • GPS

**LAND SURVEYORS
OF OKLAHOMA**



**Archeological Survey Report
on the
Cardinal River Energy I LP
SE Ponca City Block Area Study
Osage County, Oklahoma**

BCS Project Number: 22-10

Prepared For: Cardinal River Energy I LP

Project Name: SE Ponca City Block Area

Project Location: Section 24, T25N, R2E

USGS Ponca City 7.5 min.

Land Status: Osage Nation (minerals), Private Unrestricted Surface

Surveyed By: James Briscoe and Brian Rooney

April 27-29, 2010

Report By: James Briscoe and Brian Rooney

April 30, 2010

NOTICE

This report was prepared for agency review and is not intended for public use. Disclosure of site locations is prohibited. If information is to be released to the general public, all maps and references to site locations must first be removed. Permission must also be sought from Cardinal River Energy I LP and the BIA.

Briscoe-Szarka Consulting Services

Phone (405) 329-5425

P.O. Box 6566 Norman, Oklahoma 73070

Fax (405) 329-7431

Introduction

An archeological survey of the Cardinal River Energy I LP SE Ponca City Block Area Study was performed between April 27 and 29, 2010, by James Briscoe (Senior Archeologist) and Brian Rooney (Archeologist) of BCS. The project is located within the Osage Nation approximately four and a half miles southeast of Ponca City, in Osage County, Oklahoma.

The archeological survey consisted of a standard Class III Cultural Resources Inventory and was performed at the request of Jay Jimerson of Cardinal River Energy I LP. Mr. Jimerson can be reached at (405) 606-7481, 210 Park Ave., Suite 1140, Oklahoma City, OK 73102. BCS performed an archeological survey of the SE Ponca City Well in the NE/NW $\frac{1}{4}$ of Section 24, in November of 2009. Based on potential production from that well (now being completed), as many as 8 additional wells may be drilled in the west half of Section 24. The purpose of these investigations was to cover the entire area that could be affected by further drilling, to ensure that area resources would not be affected by the proposed project.

The block area is located in a wheat field on the east bank of the Arkansas River and encompasses about 110 acres (the NW/NW $\frac{1}{4}$, SW/NW $\frac{1}{4}$ and NW/SW $\frac{1}{4}$) in Section 24, T25N, R2E.

One isolated piece of fire cracked rock was observed on the surface approximately 20 meters east of a modern artificial levee. A farmstead locality, 34OS923, was located during the earlier investigations approximately 500 meters east of the current study area. Although the farmstead is associated with persons prominent in Osage and Ponca City Society, physical disturbance to the site (estimated to be >75%) precludes the site from inclusion to the National Register under Criteria C or D. The site will not be impacted by activity in the block study area and no further archeological concerns are being recommended for the study area.

This recommendation is subject to the approval of the Land Manager.

Proposed Action

BCS performed an archeological survey of the SE Ponca City Well in the NE/NW $\frac{1}{4}$ of Section 24 in November of 2009. Based on potential production from that well (now being completed), as many as 8 additional wells may be drilled in the west half of Section 24. The purpose of these investigations was to cover the entire area that could be affected by further drilling, to ensure that area resources would not be affected by future developments in the block area. Specific well locations and details will be submitted with official APD applications as needed.

For archeological purposes, roughly 110 acres encompassing the NW/NW ¼, SE/NW ¼ and NW/SW ¼ of Section 24 were included in these investigations. Production lines from any wells completed in the block area will be tied to a production line for the SE Ponca City Well. Access routes will also begin at the existing well or will be made from River Road on the east side of the block area.

Prefield Investigations and Records Check

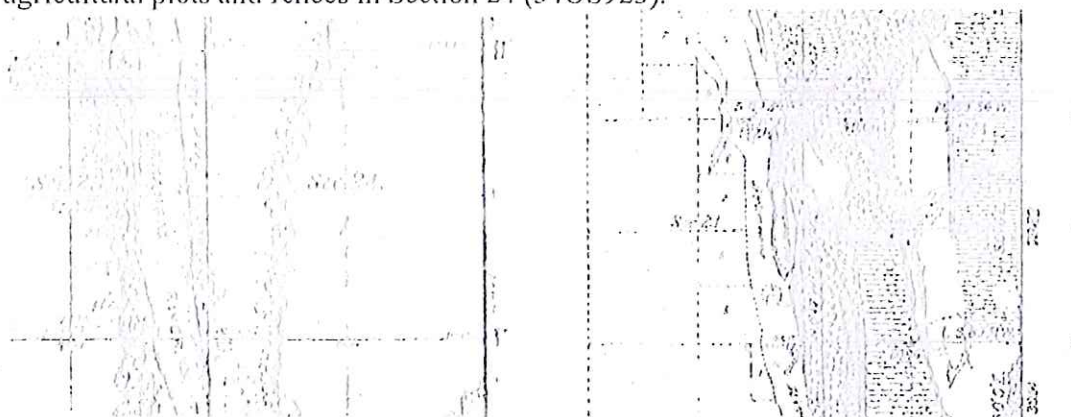
The Oklahoma Archeological Survey in Norman was visited on November 20, 2009, prior to the earlier survey. According to OAS records, two sites are located within a mile of the project area. 34KA330 is located approximately one mile from the project location. It is a lithic scatter that also includes some sherds of historic crockery and glass. 34KA331 is a prehistoric lithic scatter that is located .85 miles from the project area. Both sites are located across the river from the project. A large number of pipelines, buried cable lines and Ponca Housing/tract projects are depicted on the OASO maps, across the river from the project.

According to the Osage Allotment Maps Index, the original land allotment for the project area was granted to Mary Louise Soldani Niemann. She is the daughter of Anthony Soldani, born in 1887, married D. G. H. Niemann, and died at the age of 22 in 1909. The Neiman home was located in Ponca City. Her father, Godance Soldani, was a successful rancher in Osage and Kay Counties and Master Mason at the Ponca City Lodge. Her uncle, Sylvester J. Soldani was a Democratic State Senator for the state of Oklahoma. Her father's home in Ponca City was built in 1925 and is listed on the NRHP. It is currently being used as the town's art center.

The National Register of Historic Places was also consulted. No sites on the Register are located in the immediate project vicinity. The SHPO listing of sites determined eligible for inclusion, but not nominated was also consulted. No eligible properties are listed in the immediate area. There are a number of properties listed on the Register across the river in Kay County and within Ponca City proper. There are also a number of properties listed on the OHS *Determination of Eligibility* listings in the same general area. None of these sites are located within a mile, or visible from the project area and sites either on or eligible for inclusion to the NRHP will be disturbed physically or visually by the project.

There are no known or anticipated sacred or culturally sensitive sites that fall under the American Indian Freedom of Religion Act located in the immediate project area. The OASO map also contains a notation about a 'partial burial' found in 1973 about a mile north of the project. There is no other information about the locality, which will not be disturbed by any activity in the current study area. A copy of this report is being forwarded to the Osage Nation for comments.

The 1871 and 1908 GLO plat maps from the area were also consulted. The 1871 map does not show any activity in the area. The 1908 map shows roads, two structures, agricultural plots and fences in Section 24 (34OS923).



GLO plat map Section 26, T28N, R5E (1871 on left and 1908 on right)

The photographic archives at the Oklahoma Geological Survey were also consulted. The 1938 aerial photograph shows a farmstead (34OS923) on the west side of River Road.



1938 aerial photograph of the general project area.
(Oklahoma Geological Survey Collection)

Legal Description

The existing well (SE Ponca City) is located in the NE ¼ and the NW ¼ of Section 24, T25N, R2E. The block area encompassing the present study area includes the NW/NW ¼, SE/NW ¼ and NW/SW ¼ of Section 24, T25N, R2E. Specific well locations and details will be provided with any APD submitted for future drilling.

USGS Map Source

The well pad location is located on the Ponca City 7.5 minute quadrangle 1968 (1979).

Land Jurisdiction

The project is located on private unrestricted surface land within the Osage Nation in Osage County, Oklahoma. Mineral rights are owned by the Osage Nation and managed by the BIA, Osage Agency.

Project and Inventory Area

The block area encompassing the present study area includes the NW/NW ¼, SE/NW ¼ and NW/SW ¼ of Section 24, T25N, R2E.

Environmental Description

The project area is located along the border of the Central Red Bed Plains and the Northern Limestone Cuesta Plains geomorphic provinces and Tall Grass Prairie natural resource area. The study area is located on the floodplain and first terrace on the east side of the Arkansas River. The area is currently in wheat cultivation (average surface exposure of 50%) in an area with deep silt loam deposits. Two small remnants of natural levee terraces exist on the west edge of the study area, outlining older channel courses of the river across the tract. Shovel tests on the terraces showed over a meter (depth of the tests) of loose river sand. Both levee remnants have deep deposits of coarse to fine river sand and are covered by old growth forest. Both terraces have extensive borrow pits used to create two modern levees built along the river bank. The Arkansas River flows through a broad channel with numerous small to large sand and gravel bars. The channel has steep banks showing a 10-meter profile of sand and silt deposits with occasional small chert cobbles.

The bluff line east of the site has a steep sandstone and limestone face 40 feet high, below a gentler slope to 140 feet above the valley terraces. A small amount of coarse chert was noted along the base of the bluff. Mixed woods (walnut, elm, chinaberry, cottonwood and oaks) line the base of the bluff, levee terraces and margins of the river. The edge of the third or high terrace is located about 200 feet west of the existing well pad and an older river channel scar is visible just below the higher terrace.



Close inspection around Isolated Find Spot (standing shovel), looking south.
Zone 14 0674524E/4055638N, NAD 1927



Arkansas River and cut bank, looking north.
Zone 14 067450E/4055180N

Field Methodology

The block inventory area was covered by roughly parallel traverses walked in an ambling zigzag fashion down and back. Spacing between the traverses was approximately 15 meters. Areas with surface visibility such as cow paths and cut banks were closely inspected. Shovel tests were excavated along the levee terraces. Each shovel test 50 X 50 cm hole dug to between 100 and 125 cm deep (as deep as was possible with the shovel). Fill from each test was hand sifted through ¼ inch hardware cloth before backfilling. A Garmin GPSmap76Cx in combination with the pertinent topographic map and compass were used to pinpoint the tests and all points of archeological interest. The GPS receiver was set to the NAD 1927 datum for correlation with USGS quadrangle maps.

Survey conditions were mild, sunny to overcast and there were no impediments to the survey.

Paleontological Resources

No paleontological resources were located during the course of this survey. Quaternary fossils are common in riverbed deposits in the region.

Native American Concerns

No known areas that would fall under the realm of the American Indian Freedom of Religion Act, Native American Graves Protection and Repatriation Act, and other State and Federal guidelines protecting graves and sacred areas are located in the immediate project area. The OASO map also contains a notation about a 'partial burial' found in 1973 about a mile north of the project. There is no other information about the locality, which will not be disturbed by the current project. This report is being forwarded to the Osage Nation for comments.

Cultural Resources

No cultural resources were located in the immediate project area. One farmstead, 34OS923, was located by BCS, just east of the present study area and south of the existing well pad location.

34OS923

This is a home site on the primary allotment of Mary Louise Soldani (Osage Roll #1907) from the 1907 allotments. Mary Louise married Dr. G.H. Nieman in 1907 and died in child birth in 1909 at the age of 22 years. Dr. Nieman maintained a practice in Ponca City at the time and it is doubtful if the family ever lived on the property. Mary Louise's father, Anthony Godance Soldani, was a prominent businessman in Ponca City and had built a large home across the river from this particular allotment. Mr. Soldani was part Osage and married into a prominent Osage family (the Fronkiers). Soldani was a prosperous rancher in the region and died in 1965 as the oldest Osage tribal member. The Soldani Family maintained a large ranching operation in Kay and Osage Counties, but lived in the Ponca City area. The allotments issued to each of the family members were concentrated along the Arkansas River, where tenants lived to manage the ranching operations. The Soldani Family was one of the most prominent in Ponca City Society and the Soldani Mansion is now the Ponca City Art Museum. The Osage property passed through several hands (including the Donahoe Family, another prominent Ponca City family) and is now the farm of the Leonard Epperson Family.

The site is located on a higher third terrace at the base of the Arkansas River valley wall, facing the river to the west. The site has been mostly cleaned up by the present owner, with a new barn and plans to build a new home on the site. Evidence of five earlier structures and one concrete footing from a circa 1960s pole barn remain visible in the area. The house site had collapsed earlier and was burned in recent years by Mr. Epperson. A roughly 20 X 30 foot rectangular area (recently bladed) marks the site of the old house. A small outbuilding (roughly 10 X 10 feet) is faintly visible between the only 2 older trees on the property (a possibly 400 year old elm and a larger walnut) about 20 feet to the northwest, on the edge of the high terrace.

Careful scrutiny of domestic trash, extending for 200 X 500 feet around the structures, dates the site from the 1920s to the present. Materials observed include clear, aqua, brown and green bottle glass; white ointment jar glass, iron box and barrel straps, Coffeyville stamped paving brick, thicker 'hotel ware' white ironstone, brown/black crockery, building hardware fragments (hinges, window latch, corrugated tin, cement and concrete fragments, wire nails, and common head style screws), miscellaneous scrap metal (copper plate, iron and sheet tin), a horseshoe, bovid and pig bone fragments, and a miniature war club head. Common makers marks on glass are Owens-Illinois (letter O, and I over a diamond), Anchor-Hocking (anchor and H mark), Hazel-Atlas (H over A mark), 'no return' embossing and various 'Mason's/Ball fragments. The general date range of the marks is roughly 1920s to 1960s.



Miniature war club head(?).
(scale is 5 cm long)

The site is associated with people important within the Osage and Ponca City communities. Their involvement with the actual farmstead was managerial at most and the site does not appear to be eligible for inclusion to the NRHP under Criteria B. No monumental or noteworthy historical events, with the possible exception of introducing alfalfa to the area, occurred at the site (NRHP, Criteria A) and the site does not engender any particular or unique style or type of site (Criteria C), particularly with all standing structures having been torn down. From the archeological standpoint (Criteria D), the site has been heavily disturbed (>75%) and engenders little further archeological interest. Similar sites on Pottawatomie (Wallis 1999) and Arapaho (Briscoe and Bussey 1988) allotments received extensive Phase II investigations. Information gleaned from both of these sites did little to expand our knowledge of Native American Americanization and neither site was considered eligible for inclusion to the Register. 34OS923 does not appear to meet any of these criteria.

Isolated Find

This is a single fragment of burnt sandstone, found on the edge of a modern levee. A careful search of the surrounding area and excavation of two shovel tests in proximity to the artifact failed to locate additional cultural material. The fill for the levee came from one of two large borrow pits that were excavated from two natural levee terraces adjacent to the modern levee. It is likely that the artifact came from one of the two borrow pits. A shovel test was excavated into the bottom of one of the pits (closest to the find spot) but only modern silt and leaf debris was located in the test. It is possible that the fragment of sandstone was originally a river cobble and could have been burnt/fire cracked by a surface fire at some point in the past. The absence of other burnt rock and/or artifacts suggests the same.

The artifact does not appear to be significant but could indicate a deeply buried site along the natural levee. Any further oilfield activity in the area would logically avoid the modern levee and the find will not be disturbed further.

Recommendations

The existing well pad and access road are located about 200 meters north of the site (34OS923) and have not disturbed it. The block area study included the property west of the site and any activity in that area will not disturb the site further. The isolated find is located on the edge of a modern flood control levee and any future oilfield activity will avoid the isolated find and no adverse effects will occur. No further archeological concerns appear to be warranted and none are being recommended.

This assessment is subject to the approval of the Land Manager.

Professional Estimations

In the professional opinion of James Briscoe, Principal Investigator, these investigations and recommendations comply with Federal guidelines and standards for archeological performance in the State of Oklahoma.

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The map displays a topographic representation of a study area in Vietnam. Key features include:

- Black Survey Area:** A rectangular area outlined in black, located in the center-left of the map.
- Site Boundaries:** A red line indicating the boundaries of the study site, running diagonally from the center towards the bottom right.
- Previous Study:** A small rectangular area within the Black Survey Area, labeled with a red line and text.
- Topographic Features:** Contour lines showing elevation, with labels such as 126, 125, 124, 123, 122, 121, 120, 119, 118, 117, 116, 115, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 100, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.
- Grid:** A grid system with letters B, I, G, H along the top and bottom, and numbers 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
- Scale Bar:** A scale bar at the bottom right, showing distances from 0 to 1000 meters.
- North Arrow:** A north arrow pointing upwards, labeled with a star and the text "VN (42° E)".
- Map Labels:** "DEFORME" in the top left corner, "XMap 9.17" in the top right corner, and "Data Zoom 13.0" at the bottom right.